
Remarks / Arguments & Status

The application presently contains the following claims:

<i>Independent Claim #</i>	<i>Dependent Claim #s</i>
83	84-92
93	94-102
103	104-112
113	114-123

Claims 42-82 are deleted in this amendment, claims 1-41 having been previously deleted, while claims 83-123 are newly submitted. Support for the newly submitted claims may be found in the originally submitted claims and with specific reference to pages 7-9 of the specification as originally submitted. The applicant's attorney thanks the examiner for his thorough examination and the observations contained within the office action. The inventors and their attorney respectfully disagree with many of the conclusions drawn by the examiner with regard to the *Prior Art*, and through the thorough response presented, solicit the examiner to revisit his initial conclusions regarding the patentability of this invention.

The scope of the covered phosphites has been narrowly tailored to match the unexpected results found through experimentation by the applicant. Additionally, the alkyl substitution range has been narrowed to more closely match that provided through the specific examples found on pages 7-9 of the specification as originally filed.

U.S.C. §112, Second paragraph and Responsive Arguments

The examiner has rejected claims 62-71 (see newly submitted claims 103-112) under this section as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The examiner has rejected claims 62-64 (see newly submitted claims 103-105) under this section in that it was represented that component (b) was in terms of both a molar ratio and a percentage. Corresponding newly submitted claims 103-105 removes this basis for this rejection by stating only the mole percent of zinc and phosphorus. The applicant's attorney thanks the examiner for his helpful suggestion. Claim 62 (see newly submitted claim 103) was additionally rejected for use of the term "effective amount." While the applicant has seen this term used in numerous granted patents, in a spirit of cooperation, this wording has been removed in favor of a more definite percentage.

The examiner has still further rejected claims 63-64 (see newly submitted claims 103-104) in that the claim related to dosage in a polymer or resin, but the claims were directed to an additive formulation. The examiner was quite correct and the offending language removed.

The examiner rejected claims 72-82 (see newly submitted claims 113-123) for failing to accurately define the combination of ppm and phr. This inconsistency has been removed and the applicant's attorney thanks the examiner for his astute observations. Only a molar ratio is now recited.

The examiner rejected claims 72-75 (see newly submitted claims 113-116) for similar reasons advanced for claims 63-64. In an analogous manner to the previous claims, these claims have been amended to remove this ambiguity between ppm and phr.

The examiner has rejected claims 73-75 (see newly submitted claims 114-115) for an inconsistency between dosage in a polymer when in fact the claims covered an additive formulation only. The basis for this inconsistency has now been removed.

The examiner has rejected claims 42-51 (see newly submitted claims 83-92) under this section for confusingly combining ppm and phr in a manner similar to that above. The phraseology has been removed and only the ppm values have been retained. Similar issues were raised with claims 52-61 (see newly submitted claims 93-102) and have also correspondingly been amended through the submission of new claims.

37 C.F.R. §1.75(c) Claim objections

The examiner has objected to claims 51, 61, and 71 (see newly submitted claims 92, 102, 112) for failing to further limit the subject matter of a previous claim. The examiner was correct in his observations, and the applicant has amended the dependency of the applicable claims to correct this deficiency. The examiner has additionally noted that claims 79-80 (see newly submitted claims 120-121) also suffer from this improper form regarding the ester denoted PE phosphite. Once again, the examiner is correct and this ester has been removed from the dependent claim.

Objections to the Specification

The examiner has objected to the Specification because of the incorporation of "phr" in various tables, namely Tables III, V, VII, IX, XI, XIII, XIX, and XXI. The applicant's attorney has corrected this deficiency by renaming this column heading to "Parts." The meaning is clear in that the base resin is indicated to contain 100 parts with the various additives being added in their respective amounts. Appropriate replacement pages are provided herein.

35 U.S.C. §102 Rejection & Responsive Arguments

The examiner has rejected claims 62-77 and 79 (see newly submitted claims 103-118 and 120) under this section, subparagraph (b) as being anticipated by Valdiserri (US 4,614,756 hereinafter '756). The examiner noted that claims 72-82 (perhaps referring to the independent claim 72 and corresponding dependent claims 73-82) used the term "comprising" and therefore, did not exclude the tin additive of '756. It is respectfully submitted that as submitted via this amendment, both independent additive claims use the transitional phrase "consisting essentially of" language which should overcome the examiner's rejection. As clearly recognized by the examiner, the transitional phrase "consisting essentially of" limits the scope of the claim to the specified materials "and those that do not materially affect the basic and novel characteristic(s)." *In re Herz*, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976) (emphasis in original) See also M.P.E.P. §2111.03 (8th Ed., rev. 1). Tin is an element which directly impacts the basic and novel characteristics of the additive by itself. Therefore, the use of this transitional phrase is believed to overcome the rejection of claims 62-71 (see newly submitted claims 103-112) based on *Valdeserri*.

The rejection of claims 66-71 (see newly submitted claims 107-111) predicated on the results of a specified test is believed to have been overcome in light of the amendments made to the independent claim from which these claims depend.

35 U.S.C. §103 Rejection & Responsive Arguments

The examiner has rejected claims 78 and 80-82 (see newly submitted claims 119 and 121-122) under this section, subparagraph (a) as being unpatentable over *Valdiserri* identified above.

Valdiserri '756

Valdiserri '756 teaches the use of zinc at a level of 0.125 to 0.25 phr (or equivalently 1250 to 2500 ppm). See Tables 1-2 and Examples #19-20. By contrast, the *Stevenson et al.*, invention uses zinc in the resin at a level of 50-800 ppm. This is more than an order of magnitude greater than the minimum amount of Zn in the resin required by *Stevenson et al.*, and more than 3 times the maximum. Additionally, it must be noted that the goal of *Valdiserri* was to reduce the amount of organo tin mercaptide used. There is no teaching in the '756 patent of how it can be eliminated. In fact, the patent teaches that it is required. The "consisting essentially of" language precludes the addition of the organo tin mercaptides taught in the *Valdiserri* reference.

As indicated previously, it is important to place this technology into context. Tin stabilizers can be divided into two main groups, the first containing stabilizers with tin-oxygen bonds and the second stabilizers with tin-sulfur bonds. In the first group are tin carboxylates, which provide an excellent light and weathering stability to PVC products and find rising use particularly in outdoor applications. Some examples are transparent panels and translucent double-wall panels for greenhouses. Specific stabilizers within this group include octyltinmaleates, which are approved for the production of blow molding films, like candy wrapping.

The second group is often described as tin mercaptides. These stabilizers are highly efficient and allow the production of crystal clear, rigid vinyl articles even under high-demanding processing conditions. ***Tin mercaptides have a typical characteristic odor, which might be nuisance during processing.*** They show moderate light-stability. The most powerful compounds within the mercaptide class are the mercapto-acetate (thioglycolate) ester derivates and these are the most common tin compounds applied today. The tin mercaptides are usually mixtures of di-alkyl and mono-alkyl tin-compounds, of which the ratio can be varied to create stabilizers with best performance, mainly dependent upon the used PVC-type and the end-use application.

It is only the *Stevenson et al.*, invention that shows how organo tin mercaptide can be eliminated with the attendant benefit of removing any maliferous odor typically associated with mercaptides. This is claimed in the independent claims pending in this amendment response. The examiner has correctly noted that the rejected claims were drawn to additive formulations which are devoid of resin, therefore the

zinc limitation as the additive is used in a resin was not a distinguishing factor. However, the "consisting essentially of" language precludes the incorporation of organo tin mercaptides into the additive package, and the claims as amended are not anticipated by *Valdiserri*.

Additionally, the claims as amended also distinguish over *Valdiserri* in a nonobvious way in that the rejected claims have shown an additive package which eliminates a required alkyl tin mercaptide component. There is no teaching within *Valdiserri* as to how this could be accomplished. Therefore, one of ordinary skill in the art would read *Valdiserri* and conclude that while various phosphites are useful in the stabilization of PVC, (see col. 2, lines 10-31 of '756), when used in combination with zinc compounds, (see col. 2, lines 32-35 of '756), the reader would equally be guided by the teachings that alkyl tin mercaptide stabilizers, e.g., alkyl esters of dialkyl tin bis mercapto carboxylic acids were also essential (see col. 2, lines 58-60 through col. 3, lines 1-9). The ability to eliminate this additional heavy metal, tin, is nowhere taught in the patent, nor is there any teaching as to how this may be accomplished.

The examiner has commented on the breath of the phosphites claimed and used this to buttress the argument for obviousness. Through amendment, the applicant's attorney has amended the claims to more narrowly tailor the range of effective phosphites, this narrowed range of effective phosphites not taught in the *Valdeserri* patent. The narrowed range does show unexpected results, none of which are rendered obvious through the teachings of *Valdeserri*.

These unexpected results are clearly shown in FIG. 5 for example, where two conventional *Prior Art* stabilizer packages were employed, one using Ba/Zn and another using Ba/Cd in comparison to Dover's *PhosBooster* combination of *DoverPhos* 12 (Formula #10) and *DoverPhos* 675 (Formula #4). That similar results could be obtained based on a Yellowness Index factor using an order of magnitude less heavy metals is counter to the thinking of the *Prior Art*. The essentially insignificant weight loss when compared to *Prior Art* stabilizer packages is also illustrated in FIG. 7 where it is clearly shown that there are significantly less fugitive emissions. Still further evidence is shown in FIG. 6 wherein the *PhosBooster* combination outperformed conventional *Prior Art* packages over time based on an increased resistance to yellowing. These are unexpected results which would not have been predicted by any teaching in *Valdeserri*.

Minagawa et al., '756

The examiner has rejected claims 62-68 (see newly submitted claims 103-109) under this section, subparagraph (a) over *Minagawa et al.*, US 4,282,141 ('141).

The examiner has identified col 10, lines 55-65 as pertinent wherein the amount of metal salt used was identified as ranging from 0.01 to 10 per 100 parts resin. While this is correct, it is equally important to

note that the patent requires the use of a 1,3-diketone compound in conjunction with the metal salt. The essence of the invention involves the formation of zinc coordination complexes with the diketone, a facet which is not present in the *Stevenson et al.*, invention.

This is significant in that an emerging goal in the stabilizer industry is to develop nonfugitive liquid stabilizers that are nonfugitive both during and subsequent to the processing of PVC compounds and fabricated products. Many commercial liquid mixed metal heat stabilizers, because of their complex compositions and inherent reactivity, give rise to undesirable fugitive emissions during and subsequent to the processing of PVC compositions in which they are contained. These fugitive emissions manifest themselves as odors, vapors, and reportable VOC's in the work area. They often concurrently result in the deposition of incompatible, sticky deposits (plate out) on processing equipment. In their worst form, fugitive species continue to be emitted slowly from fabricated vinyl films and articles giving rise to downstream odors, monomolecular films and tacky exudates which interfere with printing operations and generally detract from the aesthetic qualities of the PVC article. The volatility characteristics are inherent based on the choice of any combination of materials. However, it is the express choice of *Stevenson et al.*, to exclude volatiles which is a distinguishing feature of the invention.

The *Stevenson et al.*, invention excludes 1,3-diketone compounds as required by *Minigawa*. There is no teaching in *Minigawa* as to how this could be accomplished, when in fact it is a required element. There is nothing which would render one of ordinary skill in the art to look inside *Minigawa* when the goal was to formulate an additive which was limited to the fewest essential components. The *Stevenson et al.*, invention requires selection from a defined list of phosphite esters coupled with a defined amount of zinc. The *Minigawa* patent requires the above two components, namely, phosphite esters, zinc, **PLUS** a 1,3-diketone compound. How to eliminate the fugitive 1,3-diketone compound and still achieve the beneficial results of the *Stevenson et al.*, invention are not to be found within the *Minigawa* patent. The use of the "consisting essentially of" language in the pending claims eliminates this additional component and how to achieve this desirable effect is not taught, nor rendered obvious by *Minigawa*.

Further evidence to the unexpected positive and beneficial results from the elimination of the 1,3-diketone compound can be found with reference to FIG. 7. The applicant has proven that using commercially available products, similar to that taught by *Minigawa*, (similar to the Ba/Zn stabilizer) the fugitive emissions are an order of magnitude higher than obtained using a Dover Chemical *PhosBooster DoverPhos 12/675/Zn* additive combination. There is no teaching within *Minigawa* that elimination of this type of emissive diketone compound would achieve this beneficial result and it took over 20 years before *Stevenson et al.*, discovered this result. And they did it using counterintuitive non-obvious logic which the *Prior Art* would teach as increasing the amount of additives into the PVC resin.

Housel '514

The examiner has rejected claims 42-49, 52-59, 62-69, 72-73 and 79-80 (see newly submitted claims 83-90, 93-100, 103-110, 113-114 and 120-121) under this section, subparagraph (a) as unpatentable over *Housel*, US 4,340,514 ('514). The examiner has represented that *Housel* teaches "non-toxic" liquid stabilizers for halogenated hydrocarbon resins in which zinc is in the form of a carboxylate at 0.1 to 3.5%, and which is compounded with the resin at 0.25 to 4% of the resin which was represented to overlap the claimed levels of zinc. The examiner indicated that this translated to 2.5 to 1400 phr which overlapped the claimed levels of zinc.

The applicant has advanced various arguments with regard to *Housel*, and none have been successful to date in convincing the examiner. Therefore, in the only manner which avoids the point / counterpoint argument, the applicant's attorney had the client perform a series of experiments to determine the effect of the *Housel* dual resinate system which requires both calcium and zinc resonates be present in the system with the invention of the applicant. Fortunately for the applicant, these experiments present convincing evidence that the *Stevenson et al.*, invention is an unobvious improvement over the *Prior Art* of *Housel*.

In the experiments, a resinate sample prepared in accordance with guidance from the *Housel* patent was prepared, namely the composition illustrated in col. 5 of the '514 patent in addition to the formulations illustrated in cols. 7-8. The experimental composition consisted of: 5% BHT (3,5-di-*tert*-butyl-4-hydroxytoluene) / 10% DOP (dioctyl phthalate) / 35% DoverPhos® 4 (tris(nonylphenyl) phosphite) / 30% zinc resinate / 20% calcium resinate. This additive was compounded into a formulation as follows: 100 phr resin / 55 DOP / 2.5 ESO (epoxidated soybean oil) / 0.2 stearic acid with varying amounts of the additive and compared and contrasted to compositions of the *Stevenson et al.*, invention, namely Dover PhosBooster™ 631:

78% DoverPhos® 613 (see example #4 on page 7 of the Specification)

19% DoverPhos® 53 (see example #7 on page 7 of the Specification)

3% Zn octanoate

and Dover Phosbooster™ 681

67% DoverPhos® 613 (see example #4 on page 7 of the Specification)

15% DoverPhos® 53 (see example #7 on page 7 of the Specification)

10% DoverPhos® 11 (see example #9 on page 8 of the Specification)

8% Zn octanoate.

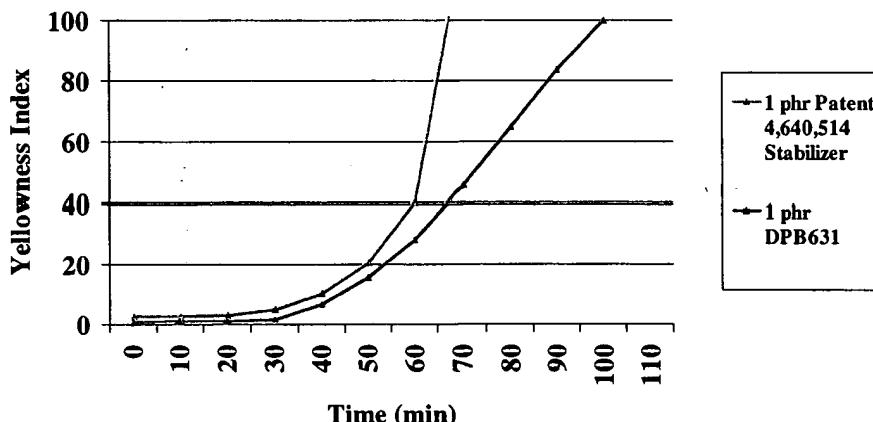
This *Housel '514* sample was compared in static heat stability experiments at 190°C experiments with DoverPhos™ 631. As seen in the following chart, at essentially equal levels of stabilizers added, namely 1 phr, the *Stevenson et al.*, invention performed significantly better at exceedingly lower levels of zinc than that of *Housel '514*. (DPB 631 = *Dover PhosBooster™ 631*)

Element	<i>Housel '514</i>	DPB 631
Zn	0.0195%	0.006%
P	0.0154%	0.055%
Ca	0.002%	

Static Heat Stability at 190°C

Formulation 1

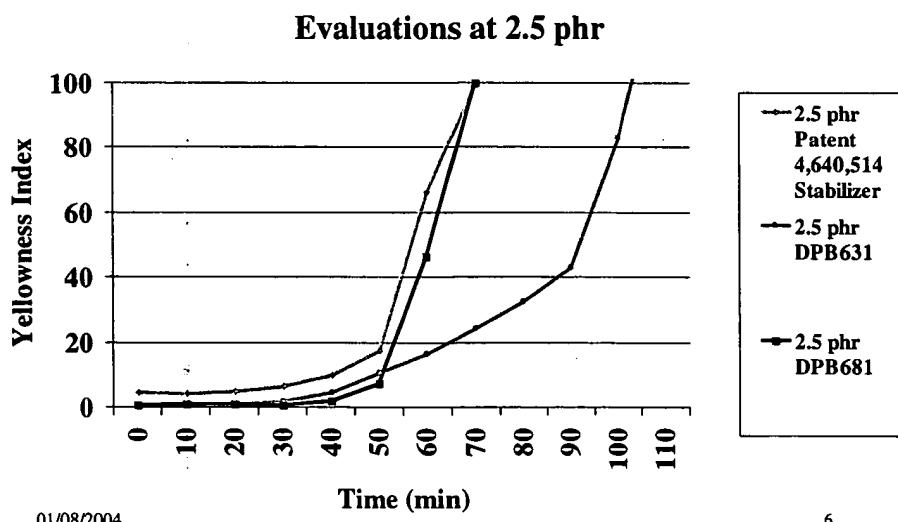
Evaluations at 1 phr



Stevenson *et al.*, then performed a similar test wherein the amount of zinc was varied. In both the *Housel* patented composition, as well as the Dover PhosBooster™ (DPB) 681 composition, the amount of zinc was held at about 0.04%. As clearly shown in the following graph, similar results were obtained. However, when that amount was decreased to about one-quarter of that amount, namely 0.015% Zn as illustrated by DPB 631, then the improvement was dramatic. This is surely an unexpected result over the patented product of *Housel*. In all instances, the amount of the additive was held constant at 2.5 phr.
(DPB = Dover PhosBooster™)

Element	<i>Housel</i> '514	DPB 631	DPB 681
Zn	0.0487%	0.015%	0.04%
P	0.0385%	0.135%	0.13%
Ca	0.004%		

Formulation 1 Static Heat Stability at 190°C

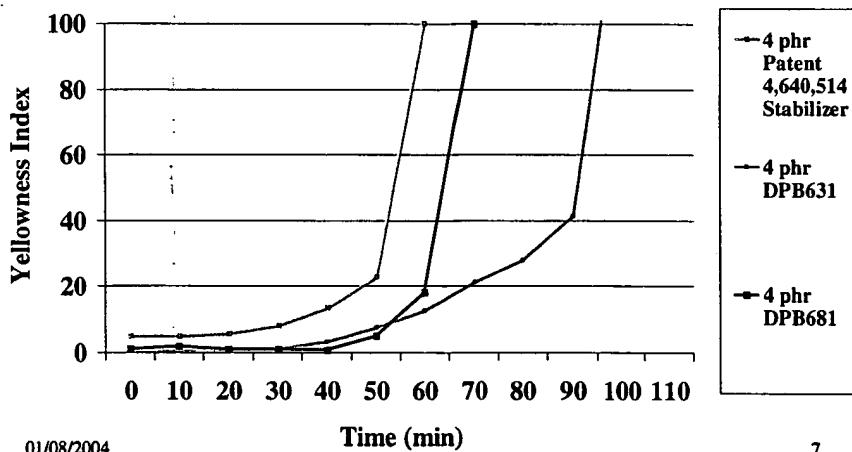


Similar results were illustrated at 4 phr additive as illustrated below, wherein the lower the amount of Zn in the formulation, the better the performance, ($Housel = 0.078\% \text{ Zn} / DPB\ 681 = 0.064\% \text{ Zn} / DPB\ 631 = 0.024\% \text{ Zn}$).

Element	<i>Housel</i> '514	DPB 631	DPB 681
Zn	0.078%	0.024%	0.064%
P	0.061%	0.22%	0.21%
Ca	0.007%		

Formulation 1 Static Heat Stability at 190°C

Evaluations at 4 phr



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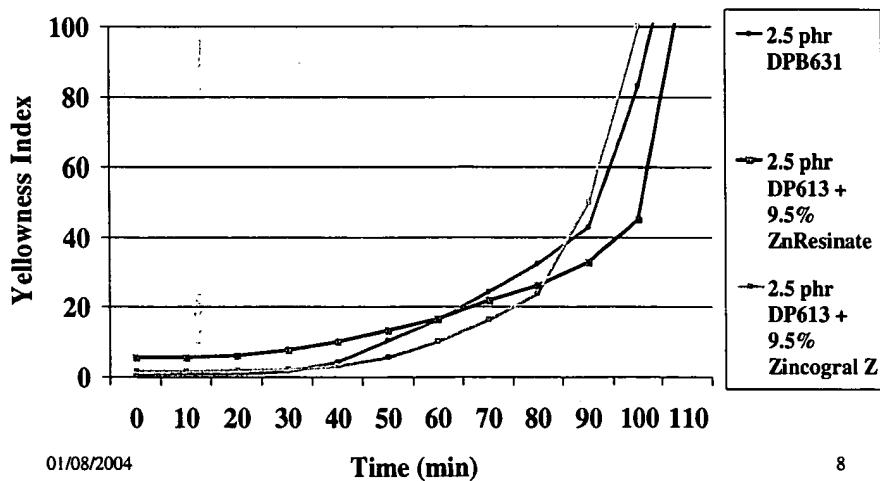
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The relationship between the source of the zinc was evaluated in the ensuing graph, wherein all formulations have approximately 0.04% Zn and wherein the Zn in the middle formulation was from a laboratory zinc resinate (without calcium) while the Zn in the third example, Zincogral Z was from a commercial zinc resinate (with calcium). This graph teaches that the source of the zinc is irrelevant, but that the improved effect is attributable to the blend of phosphites. (DPB 613 = *Dover PhosBooster™* 613 as described in the patent application on page 7)

Element	DPB 631	DPB 613 + laboratory Zn resinate	DPB 613 + Commercial Zn resinate
Zn	0.04%	0.04%	0.04%
P	0.13%	0.13%	0.13%
Ca			0.004%

Formulation 1 Static Heat Stability at 190°C

Evaluations at Equivilant Zinc Levels

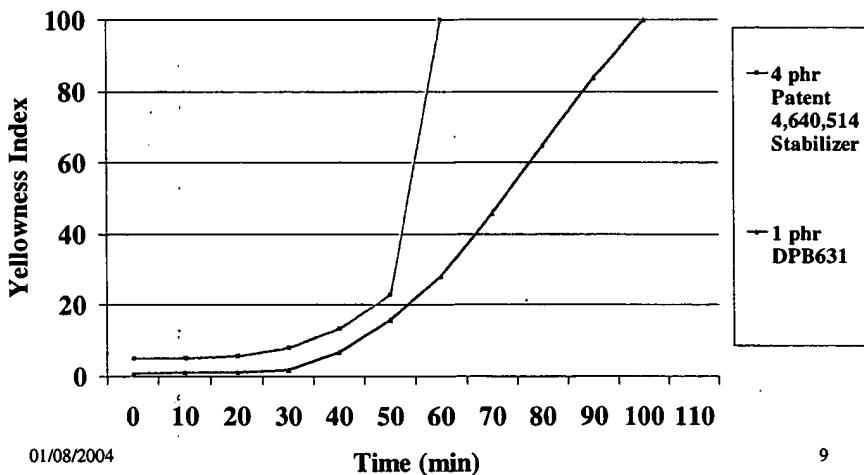


In completing the study, equal levels of phosphorus were evaluated in the *Housel* patented product as well as in the DPB 631 composition. In order to achieve this relationship, 4 phr of the *Housel* patented stabilizer was added in comparison to only 1 phr of the *Stevenson et al.*, invention. As clearly shown in the following graph, even though four times more zinc was present in the *Housel* patented composition, it did not perform nearly as well as that of *Stevenson et al.*

Element	<i>Housel</i> '514	DPB 631
Zn	0.078%	0.006%
P	0.061%	0.055%
Ca	0.01%	

Formulation 1
Static Heat Stability at 190°C

1 phr DPB631 vs 4 phr Patent Stabilizer

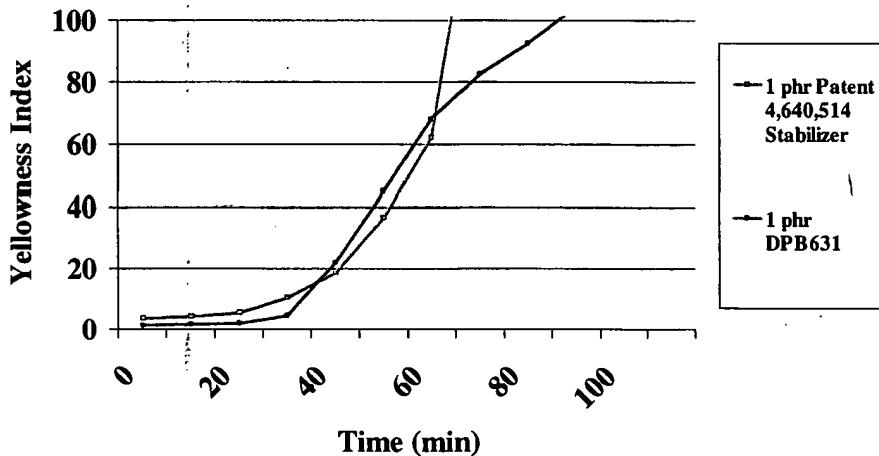


In order to be as complete as possible, *Stevenson et al.*, performed a second series of experiments using a second formulation: namely 100 phr resin / 30 phr dioctyl phthalate (DOP) / 10 phr epoxidized soybean oil (ESO) / 0.4 phr stearic acid / stabilizer as indicated in the graph. As seen in static heat stability tests at 200°C, at equivalent loadings, (1 phr), DPB 631 outperformed the *Housel* patented additive, even though the amount of zinc in the DPB 631 additive was significantly less (0.006% Zn) in comparison to *Housel* (0.0195% Zn).

Element	<i>Housel</i> '514	DPB 631
Zn	0.0195%	0.006%
P	0.0154%	0.055%
Ca	0.002%	

Formulation 2 Static Heat Stability at 200°C

Evaluations at 1 phr

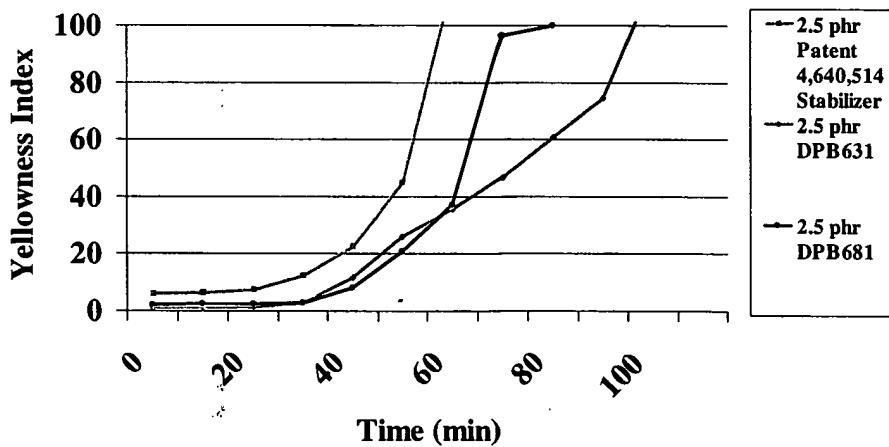


In a manner analogous to that described previously, at equivalent levels of added zinc and an additive loading level of 2.5 phr, the Dover PhosBooster™ additives performed significantly better with the best performance illustrated at the lowest level of zinc. (Housel & DPB 681 = 0.04% Zn / DPB 631 = 0.015% Zn)

Element	Housel '514	DPB 631	DPB 681
Zn	0.0487%	0.015%	0.04%
P	0.0385%	0.137%	0.13%
Ca	0.004%		

Static Heat Stability at 200°C Formulation 2

Evaluations at 2.5 phr

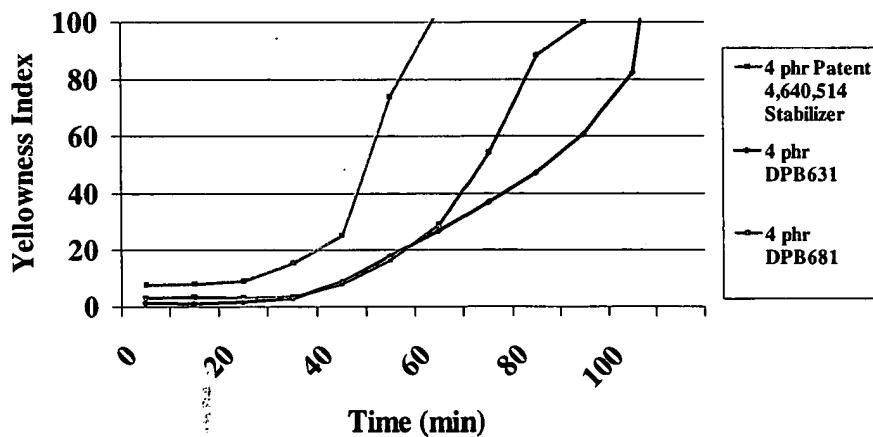


The comparison was also made at an additive concentration of 4 phr wherein once again, it was shown that the Dover PhosBooster™ additives, with the lowest amounts of added zinc were clearly superior to that of the *Housel* patented composition. (*Housel* = 0.078% Zn / DPB 681 = 0.064% Zn / DPB 631 = 0.024% Zn)

Element	<i>Housel</i> '514	DPB 631	DPB 681
Zn	0.078%	0.024%	0.064%
P	0.061%	0.22%	0.21%
Ca	0.007%		

Formulation 2 Static Heat Stability at 200°C

Evaluations at 4 phr

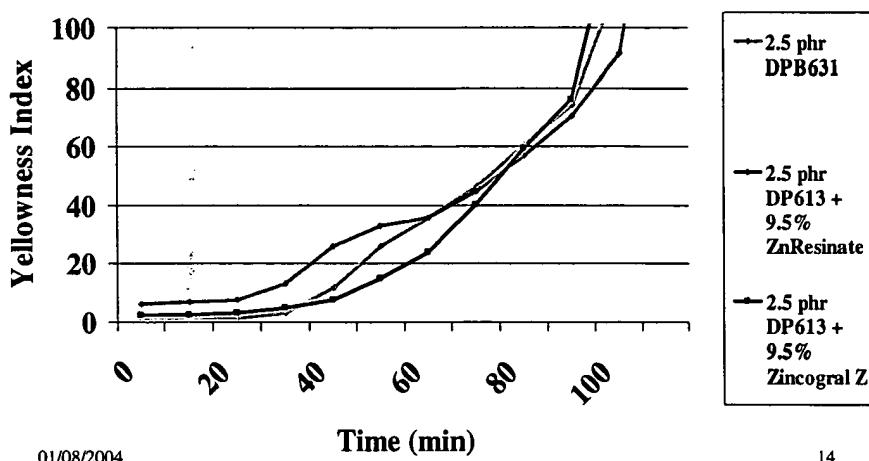


The fact that the key to the *Stevenson et al.*, invention resides in the choice of phosphites and not the zinc is clearly illustrated below wherein the addition of zinc resinate in combination with the Dover PhosBooster™ additives clearly did nothing to assist in the performance in a manner analogous to that effect discussed previously.

Element	DPB 631	DPB 613 + laboratory Zn resinate	DPB 613 + Commercial Zn resinate
Zn	0.015%	0.015%	0.015%
P	0.137%	0.13%	0.13%
Ca			0.002%

Formulation 2 Static Heat Stability at 200°C

Evaluations at Equivilant Zinc Levels

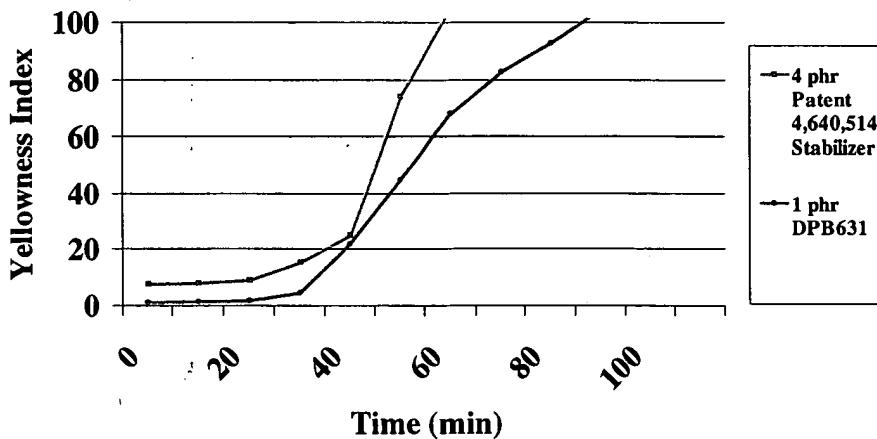


And lastly, at nearly equivalent phosphorus levels (*Housel* = 0.061% P / DPB 631 = 0.055% P), the performance of the Dover PhosBooster™ additive clearly is illustrated even at more than a 10-fold reduction in the zinc concentration (*Housel* = 0.078% Zn / DPB 631 = 0.006%).

Element	<i>Housel</i> '514	DPB 631
Zn	0.078%	0.006%
P	0.061%	0.055%
Ca	0.007%	

Formulation 2 Static Heat Stability at 200°C

1 phr DPB631 vs 4 phr Patent Stabilizer



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Clearly, the incorporation of the calcium and zinc resonates materially impacts the basic and novel performance of the *Housel* resinate additive. The elimination of the *Housel* requirement of both calcium and zinc resinate components represents an unobvious improvement over the *Prior Art*.

Rhodes et al., '200 in view of Nosu et al., '783 and Official Notice

The examiner has rejected claims 42-83 (see newly submitted claims 83-123) under this section, subparagraph (a) as unpatentable over *Rhodes et al.*, (US 3,755,200 or '200) in view of *Nosu et al.*, (US 5,120,783 or '783) and Official Notice. The examiner has represented that *Rhodes* teaches liquid stabilizer compositions for PVC comprising phosphite esters and metal carboxylates, including zinc. The desirability of using non-toxic metals was also represented to be within *Rhodes* with a preference for zinc stearate (col. 3, lines 26-48). The examiner indicated that official notice was cited merely to show what the applicant admits with respect to the phosphite esters that were well-known at the time of the invention for the purpose of stabilizing PVC. *Nosu* was indicated to be relied upon for its teaching that cadmium and barium are undesirable and that zinc and calcium are preferred for their low cost and low toxicity. This leaves the only real teaching reference as *Rhodes*.

The applicant's would respectfully request the examiner to revisit his initial conclusions regarding the patentability of the *Stevenson et al.*, invention in light of the following arguments. First, it is correct that zinc stearate is represented in the *Rhodes* '200 patent to provide excellent results, however, the patent provides no guidance as to how to remove the additional required components, namely a partial ester of a polyglycerol and an epoxy plasticizer, which are required for this system to be capable of forming a homogeneous solution which does not undergo phase separation when allowed to stand at ambient conditions for prolonged periods of time. Additionally, the '200 patent expressly teaches a specialized process by which the composition must be formed, namely "through the utilization of a specific blending technique which consists of first forming a solution of the metal salt, the epoxy compound and the organo-phosphorous, followed by heating ... The polyglycerol partial ester is then added to the resulting uniform solution and blended therewith." (See col 2, lines 11-24). The *Stevenson et al.*, invention does not require any epoxy compound. It functions without having to process the components in a specialized manner as required by *Rhodes*.

Second, the majority of liquid stabilizer systems are liquid mixed metal soaps which have similarities to some Ca-Zn stabilizers and are generally in the form of a carboxylate. As in the case of Ca-Zn heat stabilizers, all of these products require the addition of co-stabilizers to provide optimum performance. These are the same type of products as are used with Ca-Zn stabilizers and solvents are sometimes incorporated.

And third, *Rhodes* uses triaryl phosphites, particularly tris(nonylphenyl) phosphite, (TNPP) which are not particularly suitable for use in the *Stevenson et al.*, invention. The *Rhodes* patent teaches a process in which the key is to heat the zinc stearate into the TNPP. This thrust of this patent is the preparation of improved antistatic and antifogging properties. There is no link that the applicant is aware of

that improving these properties have any relationship to improving the heat or light stability of a halogenated resin.

Finally, in order to supplement the deficiencies of the above two references, the examiner has combined the teachings of *Nosu*. However, it is important to note in this patent that once again, in a manner similar to that of *Rhodes*, there are four required elements: namely (a) hydrotalcite; (b) zinc compound; (c) magnesium hydroxide; and (d) a beta-diketone and/or a phosphite compound. It is not clear why a researcher seeking to supplement the deficiencies of *Rhodes* would selectively seek out the teaching that zinc salts are preferred. It would appear to be a fairly selective reading of *Nosu*.

Additionally, *Nosu* requires a diketone as part of the additive package, and as was discussed earlier with respect to *Minigawa*, diketones represent fugitive emission problems, which the *Stevenson et al.*, invention have overcome. Once again, FIG. 7 of the application is quite clear in that the selection of the phosphites and low levels of zinc are critical toward achieving that end. The scope of the phosphites that achieve that beneficial result have been narrowed and tailored in the pending claims, and coupled with the counterintuitive low levels of zinc employed in the invention. This combination represents an unobvious result not predictable in any rational way from the teachings of either *Rhodes* or *Nosu* or combinations thereof.

Request for Reconsideration

Applicant believes that independent claims 83, 93, 103 and 113 clearly define over the prior art and that the distinctions between the present invention and the prior art would not have been obvious to one of ordinary skill in the art. Additionally, claims 84-92 depend from and contain all of the limitations of independent claim 83; claims 94-102 depend from and contain all of the limitations of independent claim 93; claims 104-112 depend from and contain all of the limitations of independent claim 103; and claims 114-123 depend from and contain all of the limitations of independent claim 113; and therefore, by the limitations contained in the base independent claims, are felt to be patentable over the prior art by virtue of their dependency from independent claims which distinguish over the prior art of record. All pending claims are thought to be allowable and reconsideration by the Examiner is respectfully requested.

It is respectfully submitted that no new additional searching will be required by the examiner.

The applicant has amended the claims in a manner in which all of the technical objections and/or rejections have been overcome. The applicant has narrowed the scope of the claimed range of phosphites which are effective as *PhosBoosters* in this invention. Additionally, when only the additive is being claimed, namely claims 103-123, the transition language "consisting essentially of" is employed, which does exclude other elements which are present in any significant quantities or which materially

impact the characteristics of the final product. The fact that *PhosBoosters* can be used as a partial replacement to traditional PVC additive packages, is irrelevant to the patentability of the additive claims and the construction of the claim language. The position advanced by the examiner regarding the presence of organotin mercaptide in *Valdiserri* formulations should be rethought because the choice of the transitional phrase is outcome determinative and the presence of organotin mercaptides materially alter the characteristics of the additive.

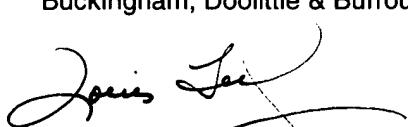
Fee Determination Record

A fee determination sheet is attached for this amendment response. The Commissioner is hereby authorized to charge any additional fee required to effect the filing of this document to Account No. 50-0983.

Conclusion

It is respectfully submitted that all references identified by the examiner have been distinguished in a non-obvious way. If the examiner believes that a telephonic conversation would facilitate a resolution of any and/or all of the outstanding issues pending in this application, then such a call is cordially invited at the convenience of the examiner.

Respectfully Submitted,
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